

WHAT IS CLAIMED IS:

1. An ergonomic knee brace comprising:
 - an upper strut for extending along the upper leg;
 - a lower strut for extending along the lower leg;
 - pivoting arrangements for intercoupling said upper strut and said lower strut; said pivoting arrangements having a center; and
 - said pivoting arrangements including stop assemblies both for flexion and extension, including:
 - a) a catch plate formed of a flat arcuate disc having an arcuate opening and having stop recesses facing or opening toward the center of said pivoting arrangements;
 - b) a movable stop pivoted at the center of the assembly and having an outwardly biased locking member for engaging said stop recesses, coupled to a release button which extends radially outward to the periphery of said pivoting arrangements; and
 - c) said release button being movable inward to shift said locking member out of said stop recesses to permit angular adjustment of said stop;
 - at least one of said struts having a flexion stop surface for engaging the flexion stop assembly; and
 - at least one of said struts having an extension stop surface for engaging the extension stop assembly.
2. An ergonomic knee brace assembly comprising a medial knee brace and a lateral knee brace, each as defined in claim 1, padding for mounting between said struts and the patient's leg, and straps for mechanically inter-coupling the upper and lower struts of said medial and said lateral knee braces.
3. A knee brace as defined in claim 1 including two substantially aligned catch plates and wherein said locking member engages both of said catch plates.

4. A knee brace as defined in claim 1 further comprising inner and outer cover plates, and wherein a part of said movable stop extends over said outer cover plate, said outer cover plate having angular indicia thereon.

5. A knee brace as defined in claim 4 wherein said part of said stop member has a window aligned with said indicia whereby said stop may be adjusted to selected angular positions.

6. An ergonomic knee brace comprising:
an upper strut for extending along the upper leg;
a lower strut for extending along the lower leg;
pivoting arrangements for intercoupling said upper strut and said lower strut; said pivoting arrangements having a center; and
said pivoting arrangements including stop assemblies both for flexion and extension, including:

- a) A generally circular plate, and a generally arcuate array of locking steps;
- b) a movable stop pivoted at the center of the assembly and having an outwardly biased locking member for engaging said locking steps, said locking member being coupled to a release button which extends radially outward to the periphery of said pivoting arrangements; and
- c) said release button being movable inward to shift said locking member out of engagement with said locking steps to permit angular adjustment of said stop,

at least one of said struts having a flexion stop surface for engaging the flexion stop assembly; and

at least one of said struts having an extension stop surface for engaging the extension stop assembly.

7. An ergonomic knee brace as defined in claim 6 wherein said knee brace has an outer cover plate having a series of indicia indicating angular positions near the outer edge thereof; and

wherein said movable stop has a radially extending flat support member overlying said circular plate, and a window opening through which the angular indicia may be seen.

8. A knee brace as defined in claim 6 wherein a matched pair of said arcuate array of locking stops are provided, and wherein said locking member engages a locking stop of each of said array of locking stops, at each angular stop position.

9. A knee brace as defined in claim 8 wherein said knee brace includes an outer cover plate and wherein said stop assembly extends over the outer edge of said outer cover plate.

10. An ergonomic knee brace comprising:

an upper strut for extending along the upper leg;

a lower strut for extending along the lower leg;

pivoting arrangements for intercoupling said upper strut and said lower strut; said pivoting arrangements having a center; and

said pivoting arrangements including stop assemblies both for flexion and extension, including:

a) an outer cover plate and an inner cover plate both being fixedly secured to one of said struts;

b) a generally arcuate array of locking steps mounted between said outer and inner cover plates;

c) a movable stop pivoted at the center of the assembly and having an outwardly biased locking member for engaging said locking steps, said locking member being attached to a release button which extends radially outward beyond the periphery of said pivoting assembly;

d) said release button being movable inward to shift said locking member out of engagement with said locking steps to permit angular adjustment of said stop,

said pivoting arrangements being mounted on one of said struts;

the other one of said struts having a flexion stop surface for engaging the flexion stop assembly; and an extension stop surface for engaging the extension stop assembly;

said outer cover plate having a series of indicia indicating angular positions, near the outer edge thereof;

said movable stop assembly having a radially extending flat support member overlying said outer cover plate adjacent the angular indicia; and

said movable stop member extending over the outer edge of the outer cover plate and into the space between said inner and outer cover plates to cooperate with said locking steps;

whereby the configuration of said stop member contributes to the reduced thickness of said pivoting arrangements.

11. A knee brace as defined in claim 10 wherein two sets of locking stops are provided and said locking member engages one locking stop from each of said two sets of locking stops.

12. A knee brace as defined in claim 10 wherein said outer cover plate has angular indicia thereon, and wherein said radially extending flat support member has a window for viewing said angular indicia.

13. An ergonomic knee brace comprising:

an upper strut for extending along the upper leg;

a lower strut for extending along the lower leg;

a pivoting assembly for intercoupling said upper strut and said lower strut; said pivoting assembly having a center; and

said pivoting assembly including stop assemblies both for flexion and extension, including:

a) An outer closure plate and an inner closure plate both being fixedly secured to one of said struts;

- b) a generally arcuate array of locking steps mounted between said outer and inner closure plates;
- c) a movable stop pivoted at the center of the assembly and having an outwardly biased locking member for engaging said locking steps, said locking member being attached to a release button which extends radially outward beyond the periphery of said pivoting assembly;
- d) said release button being movable inward to shift said locking member out of engagement with said locking steps to permit angular adjustment of said stop,

said pivoting assembly being mounted on one of said struts;

the other one of said struts having a flexion stop surface for engaging the flexion stop assembly; and an extension stop surface for engaging the extension stop assembly;

said movable stop having a radially extending flat support member overlying said outer closure plate; and

said movable stop member being cantilevered to extend over the outer edge of said outer closure plate and into the space between said inner and outer closure plates to cooperate with said locking steps;

whereby the cantilevered configuration of said stop member contributes to the reduced thickness of said pivoting arrangements.

14. A knee brace as defined in claim 13 wherein a matched pair of said arcuate array of locking steps are provided, and wherein said locking member engages a locking step of each of said array of locking steps, at each angular stop position.

15. A knee brace as defined in claim 13 wherein angular indicia are provided on said outer closure plate, and wherein said flat support plate overlies said angular indicia to identify the angular position of said stop.

16. An ergonomic knee brace comprising:
an upper strut to extend along the upper leg;

a lower strut for extending along the lower leg;

a pivoting assembly for intercoupling said upper strut and said lower strut;

and

said pivoting assembly having at least one stop assembly, including:

- a) An outer closure plate and an inner closure plate each being fixedly secured to one of said struts;
- b) an array of locking steps within said outer and inner closure plates;
- c) a movable stop having an outwardly biased locking member for engaging said locking steps, said locking member being associated with a release button which extends radially outward and is accessible at the periphery of said pivoting assembly; and
- d) said release button being movable inward to shift said locking member out of engagement with said locking steps to permit angular adjustment of said stop.

17. A knee brace as defined in claim 16 wherein said movable stop has an outwardly extending flat support member overlying said outer closure plate; and said movable stop member is cantilevered to extend over the outer edge of said outer closure plate and into the space between said inner and outer closure plates to cooperate with said locking steps.

18. A knee brace as defined in claim 16 wherein a matched pair of said array of locking steps are provided, and wherein said locking member engages a locking step of each of said array of locking steps, at each angular stop position.

19. A knee brace as defined in claim 17 wherein angular indicia are provided on said closure plate, and wherein said flat support plate overlies said angular indicia to identify the angular position of said stop.

20. An adjustable stop ergonomic knee brace comprising:

first and second struts extending along the leg above and below the knee;

a pivot assembly intercoupling the first and second struts for pivotally mounting said struts about a central pivot point, said pivot assembly having an outer periphery;

a stop for limiting relative angular movement of said struts;

a push button associated with said stop, said push button being mounted adjacent the periphery of the pivot assembly, for movement toward said pivot point to release the stop and permit angular adjustment of the stop; and

said push button being normally biased outward away from the pivot point.

21. An adjustable stop ergonomic knee brace as defined in claim 20 wherein said pivot assembly has angular indicia thereon, and said stop has an indicator movable with said stop, said indicator overlying said angular indicia.

22. An adjustable stop ergonomic knee brace as defined in claim 20 wherein indicia and indicators are provided for both flexion and extension stops, and wherein the push button and indicia for the flexion stop and indicia are of one color and the push button and indicia for the extension stop are of another color.

23. An adjustable stop ergonomic knee brace as defined in claim 20 wherein the outermost surfaces of said push buttons is provided with a non-slip configuration.